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Bailus Walker, Jr., Ph.D., M.P.H.

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*The Commonwealth of Massachusetts*  
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*Department of Public Health*

150 Tremont Street

Boston 02111

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TO: John Cutler, M.D., Ph.D.  
 Director, Division of Environmental Health Assessment

FROM: Martha Steele, M.P.H.

RE: Cancer Mortality in Littleton

DATE: May 4, 1984

Cancer mortality data for Littleton for the period 1971-1980 were reviewed. The data were divided into 2 five year periods, 1971-1975 and 1976-1980. In addition, mortality data for 1981-1982 and incidence data for 1982 were reviewed. The data were provided by the Division of Health Statistics and by Littleton community members, who did their own research into deaths due to cancer in Littleton. The following summarized the findings.

## 1. TOTAL DEATHS DUE TO CANCER:

(Throughout this paper, the expected values for 1971-1975 were taken from the Massachusetts SMR book for the period 1969-1973, and the expected values for 1976-1980 were taken from the SMR book for the period 1974-1978)

	<u>OBSERVED</u>	<u>EXPECTED</u>	<u>SMR</u>	<u>SIGNIFICANCE</u>
1971-1974	53	42.5	125	NS
1976-1980	68	47.9	142	p = 0.004
1971-1980	121	90.4	134	p = 0.001

\*Chi-square test

NS = Not Significant (p &gt; 0.05)



2. Tables 1-3 show the expected and observed values for specific cancers for the periods 1971-1975, 1976-1980, and 1971-1980. Significance values were obtained using the Poisson Distribution.

TABLE 1

Cancer Mortality 1971-1975

<u>SITE</u>	<u>ICDA</u>	<u>OBSERVED</u>	<u>EXPECTED</u>	<u>SIGNIFICANCE</u>
Stomach	151	7	2.1	p
Large Intestine/ Rectum	153-154	4	6.3	NS
Lung/Bronchus	162	16	8.2	p = 0.01
Breast	174	6	4.2	NS
Other Female Organs	181-184	2	2.0	NS
Prostate	185	1	1.9	NS
Bladder	188	2	1.1	NS
Kidney	198	2	0.8	NS
Leukemia	204-207	1	1.7	NS
Others		<u>12</u>	<u>14.2</u>	NS
TOTAL		53	42.5	NS

NS = Not Significant ( $p > 0.05$ )



TABLE 2

## Cancer Mortality 1976-1980

<u>SITE</u>	<u>ICDA</u>	<u>OBSERVED</u>	<u>EXPECTED</u>	<u>SIGNIFICANCE</u>
Stomach	151	3	2.1	NS
Large Intestine/ Rectum	153-154	10	7.3	NS
Pancreas	157	1	2.4	NS
Lung Bronchus	162	12	10.	NS
Breast	174	5	4.5	NS
Other Female Organs	181-184	5	2.1	NS
Prostate	185	6	2.3	p = 0.03
Bladder	188	1	1.2	NS
Kidney	189	2	0.8	NS
Leukemia	204-207	2	1.8	NS
Others		<u>21</u>	<u>13.4</u>	p = 0.04
TOTAL		68	47.9	p = 0.004

NS = Not Significant (p.&gt;0.05)



TABLE 3

## Cancer Mortality 1971-1980

<u>SITE</u>	<u>ICDA</u>	<u>OBSERVED</u>	<u>EXPECTED</u>	<u>SIGNIFICANCE</u>
Stomach	151	10	4.2	p = 0.01
Large Intestine/ Rectum	153-154	14	13.6	NS
Lung Bronchus	162	28	18.2	p = 0.02
Breast	174	11	10.5	NS
Other Female Organs	181-184	7	4.1	NS
Prostate	185	7	4.2	NS
Bladder	188	3	2.3	NS
Kidney	189	4	1.6	NS
Leukemia	104-107	3	3.5	NS
Others		<u>33</u>	<u>25.6</u>	NS
	TOTAL	121	90.4	p = 0.001

NS = Not Significant (p.>0.05)

3. With regard to age at death:

- for 6 prostate cancer cases (1976-1980):

65-69 -1  
70-74 -1  
75-79 -2  
80+ -2

- for 7 stomach cancer cases (1971-1975):

55-59 - 1  
60-64 - 1  
65-69 - 0  
70-74 - 2  
75-79 - 1  
80+ - 2





- for 16 lung/bronchus cancer cases (1971-1976):

45-49 - 2  
 50-54 - 1  
 55-59 - 3  
 60-64 - 2  
 65-69 - 4  
 70-74 - 3  
 75-79 - 1

4. Cancer mortality data for 1981-1982 do not show an unusual overall cancer or specific cancer rate (22 cases for the two year period vs. 18.8 expected).
5. Figure 1 shows the absolute number of cancer deaths by two year periods from 1971-1982. The peak number of deaths occurred in 1977-1978, and have been declining since then.
6. Cancer incidence data for 1982 are significantly elevated. Expected cancer incidence was derived using Connecticut data.

#### TOTAL CANCER INCIDENCE IN 1982

Observed	33
Expected	23.4

( $p=0.047$ , chi square test)

The incidence data show a significant elevation (using the Poisson distribution) only in cancer of the cervix uteri (2 vs. 0.33,  $p=0.044$ ). However, the numbers are too small for this to be meaningful. Table 4 gives the expected and observed values for specific cancers.



TABLE 4

## Cancer Incidence - 1982

<u>SITE</u>	<u>ICDA</u>	<u>OBSERVED</u>	<u>EXPECTED</u>	<u>SIGNIFICANCE</u>
Large Intestine/ Rectum	153-154	8	4	NS
Pancreas	157	1	0.7	NS
Lung/ Bronchus	162	3	2.96	NS
Breast	174	3	3.4	NS
Cervix Uteri	180	2	0.33	p = 0.044
Other Female Organs	181-184	2	1.5	NS
Prostate	185	4	1.7	NS
Bladder	188	2	1.2	NS
Kidney	189	1	0.46	NS
Others		<u>7</u>	<u>7.2</u>	NS
TOTAL		33	23.4	p = 0.047

NS = Not Significant ( $p > 0.05$ )

7. Stomach, large intestine/rectum, and prostate cancers for 1971-1980 were plotted on a Littleton map, and no clustering was apparent. Also plotted were lung cancers vs. all other cancers. There appeared to be a disproportionate number of lung cancers occurring west of I-495 vs. east of I-495 (see Table 5). However, this was not statistically significant.



TABLE 5

## Lung Cancers vs. All Other Cancers

	<u>West of I-495</u>		<u>East of I-495</u>	
	Lung	Others	Lung	Others
1971-1975	7	13	9	24
	7/20=35%		9/33=27%	
1976-1980	6	16	6	40
	6/22=27%		6/46=13%	

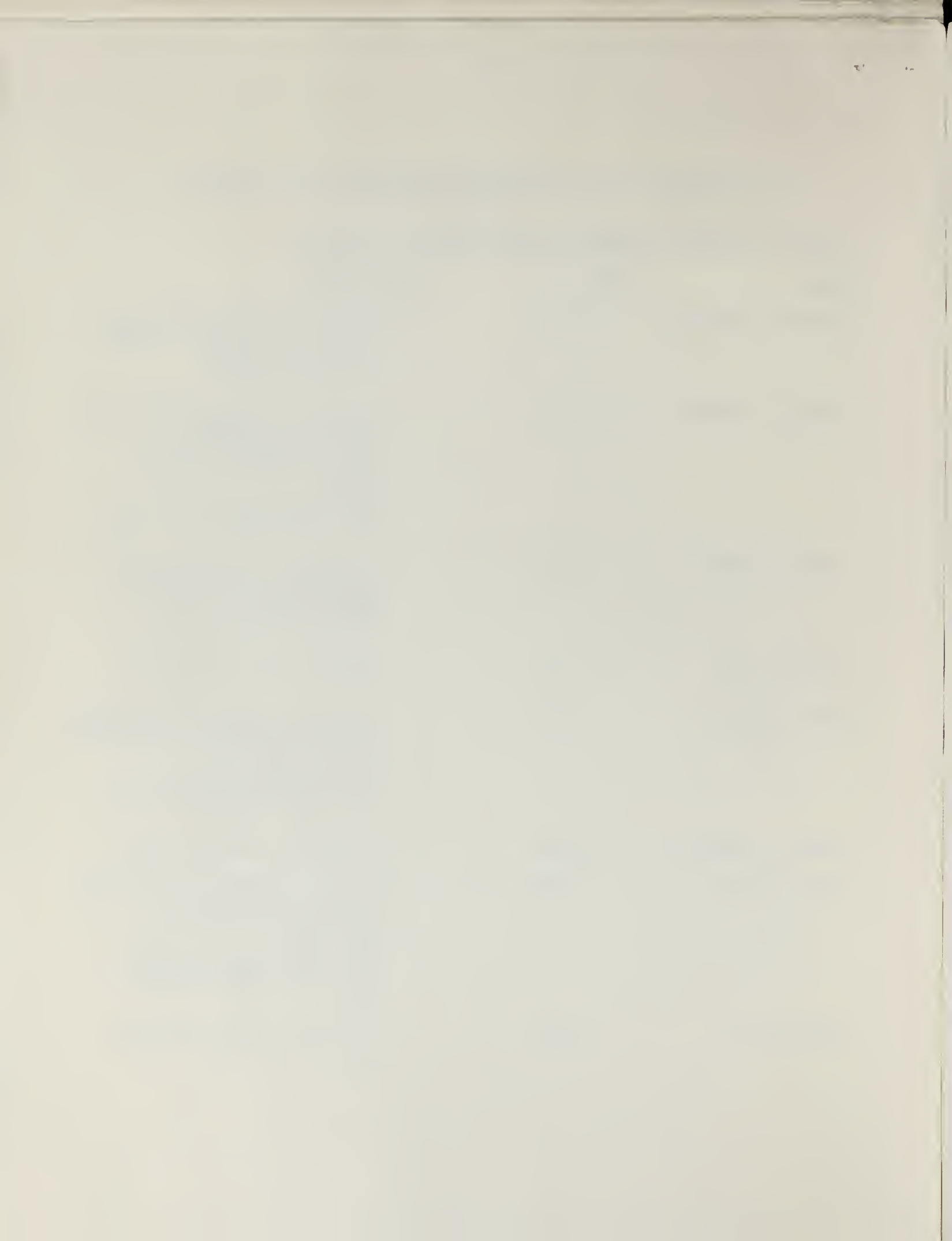
8. Littleton has one nursing home (Littleton House, 191 Foster Street approximately 120 beds, opened June, 1978), one elderly housing project (19 Shattuck Street, 47 units, opened November, 1973) and one motor court with mostly elderly residents (239 Ayer Road). For the period 1976-1980, 11 residents of these three addresses died of cancer. If a substantial number of these residents came from other towns (the neighboring towns of Harvard and Boxborough, for instance, do not have any nursing homes), the statistics seen here may overstate the incidence of cancer in Littleton.
9. The Littleton citizens submitted an incomplete lists of cancer deaths in 1983. However, at this time, cancer mortality data from the Division of Health Statistics for the year 1983 are not yet available. Therefore, we cannot evaluate 1983 mortality data at this time.
10. There were some discrepancies between the data provided by Littleton residents and the data provided by Littleton residents and the data provided by the Division of Health Statistics. In some cases, a cancer was listed on the death certificate under "other significant conditions". Since cause of death was not due to the cancer, this information cannot be used to compare observed cancer mortality vs. expected cancer mortality. This is because the data on which the determination that a certain kind of disease are elevated are based on the cause of death only.



The discrepancies follow, and explanations offered where possible.

LISTED BY LITTLETON RESIDENTS BUT NOT BY HEALTH STATISTICS:

<u>Name</u>	<u>DOD</u>	<u>Explanation</u>
Edward J. Sullivan	6/27/72	Verified by death certificate as resident of Littleton. Immediate cause of death: coronary occlusion
Charles D. Topham	4/22/73	Verified by death certificate as resident of Littleton. Immediate cause of death: chronic obstructive lung disease Other significant conditions: carcinoma of lung
Charles E. Roach	2/25/78	Verified by death certificate as resident of Littleton. Immediate cause of death: carcinoma of cecum
Eva May Young	3/21/79	No record found of death in 1979.
Marion Lingham	7/10/79	Verified by death certificate as resident of Littleton. Immediate cause of death: congestive heart failure Other significant conditions: carcinoma of breast
Arthur S. Blanchard	6/5/80	No record of death in 1980
Barbara Gilley	10/9/82	Verified by death certificate as resident of Littleton. Immediate cause of death: brain tumor (this individual was added to the list of cancer cases in 1982)
William Rule	5/4/82	No record found of death in 1982.





In addition, the Littleton residents listed 6 deaths due to cancer where the individuals were not residents of Littleton at the time of their death.

	<u>Residence</u>
Vera Boynton	Groton
Thomas Callahan	Westford
Debra Bouchard	Pepperell
William DeVries	Westford
Russell W. Cann	Beverly
Winnifred L.F.Silva	Beverly

